



## **Classroom Design Specialist: Social Distancing**

Performance Task

### **Introduction**

A school district is redesigning their classrooms to allow for social distancing so the students can return to school during the COVID-19 pandemic. The school leaders are looking for ideas about how to redesign the classroom while keeping all the students as well as the teacher safe from getting the virus.

Driving Question: How can we create a classroom environment that keeps everyone safe during the Covid-19 pandemic?

### **Big Idea / Essential Questions**

#### **Big Idea**

- Engineering design is a creative process that anyone can do which may result in new inventions and innovations.
- Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization.
- Measurement attributes can be quantified, and estimated using customary and non-customary units of measure.

#### **Essential Questions**

- How is the engineering process and problem solving used when creating new inventions and innovations?
- How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?
- In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?

### **G.R.A.S.P.**

#### **Goal**

Your goal is to redesign a typical classroom to allow for social distancing of the students and their teacher.

#### **Role**

You are a classroom design specialist, and your role is to create classroom spaces that will be safe, as well as a comfortable and inviting space for learning.

#### **Audience**

Your audience will be the parents, school leaders and School Board Members. You will need to create a number of products that help explain your design ideas and persuade the audience that your idea provides for the safety of the students.

## Situation

Classrooms are the place where students spend the majority of their time while in school. Most students walk into the classroom and think little about what makes up the classroom. The physical space within a classroom is very important for student learning. When architects, teachers, and school leaders design classrooms they have to think about many different ideas.

So much uncertainty remains as K-12 schools plan for the reopening of their buildings to students and teachers. To ensure the safety of students, teachers and staff, everything will look very different “ from classrooms and cafeterias to playgrounds and social spaces. The coronavirus has forever changed education.

Social distancing in a school may include limiting classroom and meeting room capacity, repurposing larger unused spaces like gyms and libraries for classes, having students remain in one location while teachers move from class to class, adding barriers, changing the configuration and placement of desks to observe six feet physical distancing guidelines and ensure people aren’t facing one another, frequent cleaning and more support for those still learning from home.

This site may be helpful with your research: <https://fhai.com/insights/6-classroom-layouts-to-maintain-social-distancing/>

## Products

### 1. Classroom Layout

Create a layout showing the design of your proposed classroom. A typical classroom is 900 square feet. To determine the amount of desks that can be included in the classroom with social distancing, you need to be sure that each person (including the teacher) will have 6 feet of personal space in every direction.

How many students will fit in your classroom with social distancing?

Show the layout of all of the desks as well as the teacher desk for your classroom. Be sure to include all of the safety equipment that will be in the classroom and where they will be located. Remember to include all units and labels so the layout is easy to read by the school administrators and board members.

- What furniture, color, lightening will be included in your design?
- How can you create a good environment for students and their learning?

### Classroom Layout - Social Distancing

Achievement  
Levels

1

2

3

4

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<b>Achievement Engineering and Design Levels</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Engineering and Design</b> (x1)	Product shows little understanding of the problem and creates a design that minimally meets the safety needs of teachers and students in the classroom.	Product shows partial understanding of the problem and creates a design that somewhat meets the safety needs of teachers and students in the classroom.	Product shows sufficient understanding of the problem and creates a design that meets the safety needs of teachers and students in the classroom.	Product shows a strong understanding of the problem and creates a design that meets the safety needs of teachers and students in the classroom.
<b>Neatness</b> (x1)	Product lacks neatness and readable labels and measurements.	Product is partially neat with somewhat readable labels and measurements.	Product is mostly neat with readable labels and measurements.	Product is neatly drawn with readable labels and measurements.
<b>Labels</b> (x1)	Product contains very few labels for elements of new classroom design.	Product contains labels for some elements of new classroom design.	Product contains labels for most elements of new classroom design.	Product contains labels that explain all included elements of new classroom design.
<b>Measurement Calculations</b> (x1)	Few of the measurement calculations are shown and are realistic for a socially distanced classroom.	Some of the measurement calculations are shown and are realistic for a socially distanced classroom.	Most measurement calculations are shown and are realistic for a socially distanced classroom.	All measurement calculations are shown and are realistic for a socially distanced classroom.

## 2. Scale Drawing

A typical classroom measures 900 square feet. In order to maintain social distancing, desks must be placed at least 6 feet apart in all 4 directions. You are to create a scale drawing of your classroom showing the size of the room, student desks, the teacher's desk and any other furniture that will be included.

This drawing should be to an appropriate scale showing all measurements of furniture, equipment, and space between. Do not forget to include a ratio for your dimensions as compared to actual measurements with appropriate units. This scale drawing will be used to present your classroom design at the school board meeting.

- What does the physical space of your classroom look like for 25 students?
- What furniture will you be including?
- How will student seating be arranged?
- What is the scale of your drawing to the actual classroom?

### Furniture Plan - Interior Designer

<b>Achievement Levels</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Engineering and Design</b> (x1)	Product demonstrates minimal understanding of the safety of teachers and students in the new classroom design.	Product demonstrates some understanding of the safety of teachers and students in the new classroom design.	Product demonstrates adequate understanding of the safety of teachers and students in the classroom design.	Product demonstrates strong understanding of the safety of teachers and students in the classroom design.
<b>Scale Drawing</b> (x1)	A scale is included but few parts of the plan are accurately drawn to scale.	Product is a very basic scale drawing with the potential to represent some actual measurements.	Product is an adequate scale drawing that can be used to represent actual measurements.	Product is an excellent scale drawing that can be used to represent actual measurements.
<b>Neatness and Labels</b> (x1)	Product created is somewhat neat with few aspects clearly labeled.	Product created is mostly neat with some aspects clearly labeled.	Product created is neat with most aspects clearly labeled.	Product created is very neat with all aspects clearly labeled.
<b>Area</b> (x1)	Product demonstrates minimal understanding of the concept of area through	Product demonstrates some understanding of the concept of area through partially	Product demonstrates adequate understanding of the concept of area through mostly accurate	Product demonstrates thorough understanding of the concept of area through

<b>Achievement Levels</b>	<b>1</b> inaccurate representation and calculations.	<b>2</b> accurate representation and calculations.	<b>3</b> representation and calculations.	<b>4</b> accurate representation and calculations.
<b>Ratios</b> (x1)	Product shows a limited understanding of ratios by providing an incorrect unit rate for the scale drawing.	Product shows a basic understanding of ratios by providing a partially correct unit rate for the scale drawing with units.	Product shows a satisfactory understanding of ratios by providing a mostly correct unit rate for the scale drawing with units.	Product shows a complete understanding of ratios by providing a correct unit rate for the scale drawing with appropriate units.

### 3. Multimedia Presentation

You will be presenting your socially-distanced classroom design at the local school board meeting for their approval. Create an electronic presentation along with notes for yourself to use when presenting to the school board as well as the public at the meeting. Your presentation should include your design, the numbers of students who will be in each classroom and how you determined that social distancing will be achieved through your layout. Be sure to include the math calculations that you used to determine the placement of the desks. You want to make your explanations of the math clear and thorough for your audience.

Since your presentation will be shown as a Zoom meeting throughout the community, it would also be beneficial to end your presentation with other ways that both students and teachers can help keep themselves and others safe from this disease.

- What ideas would help students learn best?
- What would make them comfortable?
- How can a classroom be designed to encourage students to work together?

#### Webcast - Interior Designer

<b>Achievement Levels</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Communicating Mathematically</b> (x1)	Student does not use research or math work when attempting to justify their conclusions to others.	Student minimally justifies their conclusions to others based upon research findings and mathematical work.	Student sufficiently justifies their conclusions to others based upon research findings and mathematical work.	Student thoroughly justifies their conclusions to others based upon research findings and mathematical work.
<b>Technology</b> (x1)	The technology applications utilized do not connect the presentation and topic. The graphics and fonts are unattractive and do not connect with the topic of the presentation.	The technology applications utilized connect the presentation and topic. Some graphics and fonts are attractive and connect with the topic of the presentation.	The technology applications utilized enhance the presentation and topic. Most graphics and fonts are attractive and support the topic of the presentation.	The technology applications utilized strongly enhance the presentation and topic. All graphics and fonts are attractive and support the topic of the presentation.
<b>Multimedia Presentation</b> (x1)	Presentation lacks focus and is not very well organized with any important information for the viewer.	Presentation has some focus and is somewhat organized with information for the viewer.	Presentation has focus and is organized using important information for the viewer.	Presentation has good focus and is well organized using important information for the viewer.
<b>Presentation Delivery</b> (x1)	The presentation is given with minimal command of language, voice, pronunciation, and style appropriate to the audience.	The presentation is given with some command of language, voice, pronunciation, and style appropriate to the audience.	The presentation is given with sufficient command of language, voice, pronunciation, and style appropriate to the audience.	The presentation is given with strong command of language, voice, pronunciation, and style appropriate to the audience.

### 4. Public Service Announcement

School leaders around the world are continually making decisions about opening schools to students, educators and staff. Designing a classroom to maximize safety is important, but the humans using the school will need to do their part to keep everyone safe.

As part of your work in re-designing classroom space, you have also been asked to provide a public service announcement (PSA) for the district's website. This PSA will be an informative and persuasive message regarding student and adult expectations in school. This announcement should outline expectations for students and adults in school and provide visual examples to reinforce what is expected. Making these decisions based upon science is important for schools and communities.

Please use the following articles to make your recommendations for expectations of everyone in school:

Centers for Disease Control and Prevention (2020). CoronaVirus Disease 2019: Frequently Asked Questions: Spread, Prevention.

<https://www.cdc.gov/coronavirus/2019-ncov/faq.html>

World Health Organization (2020). How is Covid-19 transmitted?

<https://www.who.int/news-room/q-a-detail/q-a-how-is-covid-19-transmitted>